# Flexibility Innovation Programme: Interoperable Demand Side Response Programme

Information event – Tuesday 14 June 2022

Department for
Business, Energy
& Industrial Strategy

# Welcome and introductions

WITHDRAWN

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# Agenda

| Agenda |
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| Background |
| Policy Context |
| Programme Overview |
| Application Process |
| Q&A |

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# Housekeeping

- This presentation will be published after the event on the [Interoperable Demand Side Response website](#)

- If you have questions about the Interoperable Demand Side Response programme and the application process, please type these into the Q&A function and we will endeavour to answer them at the end of the session

- Any questions not answered in today's session and that we judge of material significance will be answered through the formal clarification process

- Please note this event will **not** be recorded

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# Purpose of today

Provide an overview of the **Interoperable Demand Side Response Programme** and its Competition streams

Provide an opportunity to ask questions

Provide a summary of the application process. Please register to the '**How to Apply**' session today at 3-4pm for further guidance

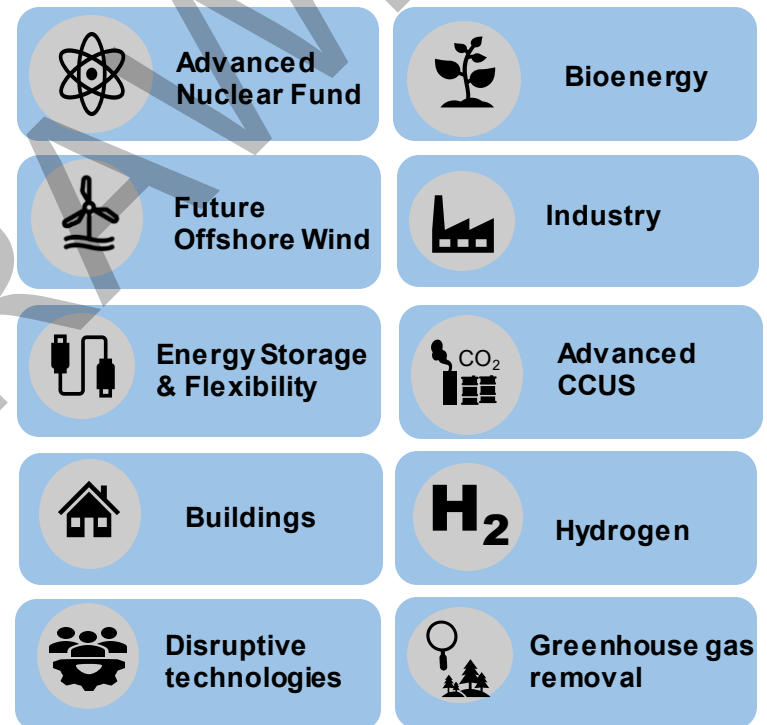Department for Business, Energy & Industrial Strategy

# Background and Policy Context

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# BEIS Net Zero Innovation Portfolio

[£1 billion Net Zero Innovation Portfolio](#) (NZIP)

- Aims to **accelerate the commercialisation of innovative low-carbon technologies, systems and processes in the power, buildings and industrial sectors.**

- Builds on the previous £505 million Energy Innovation Programme.

- Potential to unlock up to 300,000 jobs by 2030 in exports and domestic industry, enables savings across low carbon sectors, and will have a strong regional impact in the UK.

- Aims to leverage £1bn industry-matched funding.

| | |
|---|---|
| Advanced Nuclear Fund | Bioenergy |
| Future Offshore Wind | Industry |
| Energy Storage & Flexibility | Advanced CCUS |
| Buildings | $H_2$ Hydrogen |
| Disruptive technologies | Greenhouse gas removal |

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# Flexibility Innovation Programme

Up to £65m to develop innovative solutions to enable **large-scale widespread electricity system flexibility** through smart, flexible, secure, and accessible technologies and markets

## NZIP Flexibility Innovation Programme (up to £65m)

### Integrating Systems for Flexibility

- Interoperable Demand Side Response
- Vehicle-to-X

### Data and Digitisation

- Automatic Asset Registration
- Smart Meter Energy Data Repository
- Smart Meter Internet of Things Applications

### Markets for Flexibility

- Proposed innovation activity under review

### Anticipated wider whole systems demonstration

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# Why interoperable demand side response?

- As electricity demand rises due to the electrification of transport, heat and industrial processes, **flexibility from consumers** will become increasingly important.

- The Smart Systems and Flexibility Plan 2021 (SSFP) set out a suite of policies to enable flexibility from consumers, known as "**demand side response**". Consumers will need access to "energy smart" appliances that make it easier to change their consumption patterns, alongside tariffs and services that incentivise this change.

- As part of this, the Government has committed to taking powers to set regulatory requirements for "energy smart" appliances, guided by principles of **interoperability, data privacy, cyber security and grid stability**.

- Following consultation, the Government also commissioned the British Standards Institute to develop two standards (**PAS 1878 and 1879**) with industry. These standards were published last year and set out a technical framework for small-scale demand side response, guided by the same principles, and compatible with the **GB Smart Metering system**.

- As stated in the SSFP and the response to EV Smart Charging consultation, the government is aiming to consult later this year on an appropriate regulatory approach for flexibility service providers and other organisations controlling load.

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# Background to PAS 1878 and 1879

- Standardisation helps to **lower costs** and **promote innovation** in technologies, while **accelerating the uptake** of **secure and interoperable** smart products and services

- Develop **technical specifications** which could be referenced and required by **future regulations** and would enable certification

- Demonstrate **UK leadership** on the international stage, by promoting published standards for **international adoption**

**4 principles** underpin PAS 1878 and 1879 standards, developed in consultation with industry stakeholders
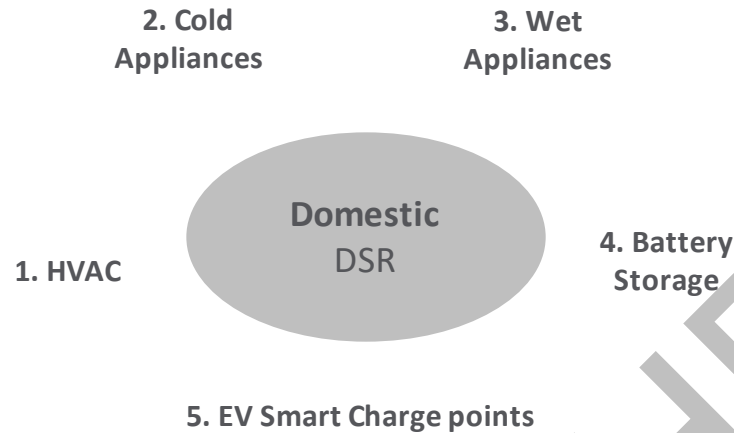
Interoperability

Data Privacy

Grid Stability

Cybersecurity



GREEN IS GREAT BRITAIN

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# DSR via PAS 1878 and 1879

A **standardised technical framework**, covering both **ESAs and DSR** for end-to-end system across **2 PASs**

**2. Cold Appliances**

**3. Wet Appliances**

**Domestic DSR**

**1. HVAC**

**4. Battery Storage**

**5. EV Smart Charge points**

## Operational approach

Specify **only the** <u>minimum</u> **requirements** to deliver DSR in line with the 4 **Policy Principles**, which **allows innovation** on top

Specify a **DSR framework**, with details for **called response services**, but also allowing for other **routine** services
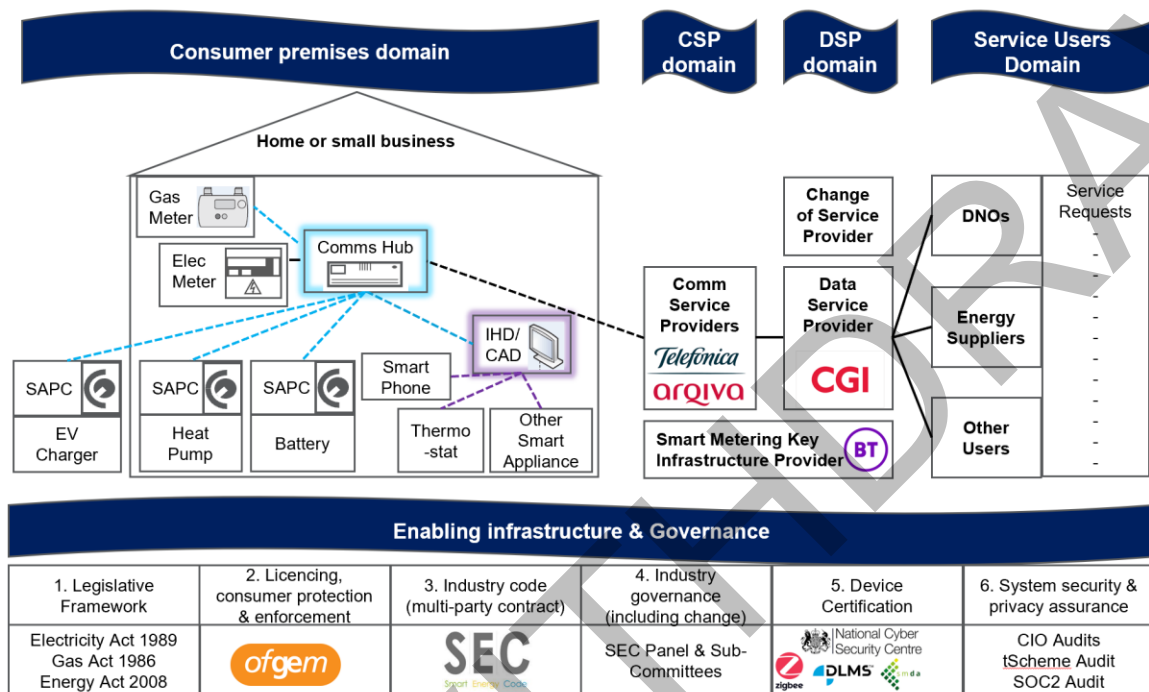
DSRSP — aggregator

OpenADR

CEM — logical entity

ESA — energy smart appliance
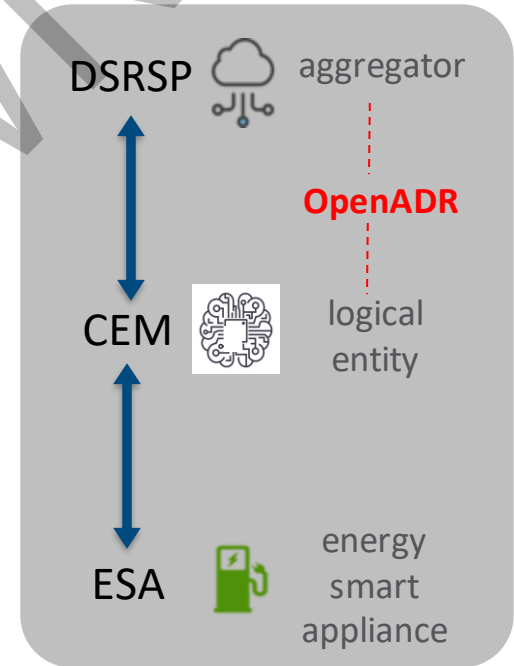
**PAS 1878** Appliance-side: "**ESA specification for classification**"

**PAS 1879** Grid-side: "**DSR framework for operation**"

integration

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# DSR via the GB Smart Metering System



- DSR delivered by SAPC
- SAPC technical specifications set out in SMETS
- SAPC can be integrated or non-integrated with the appliance
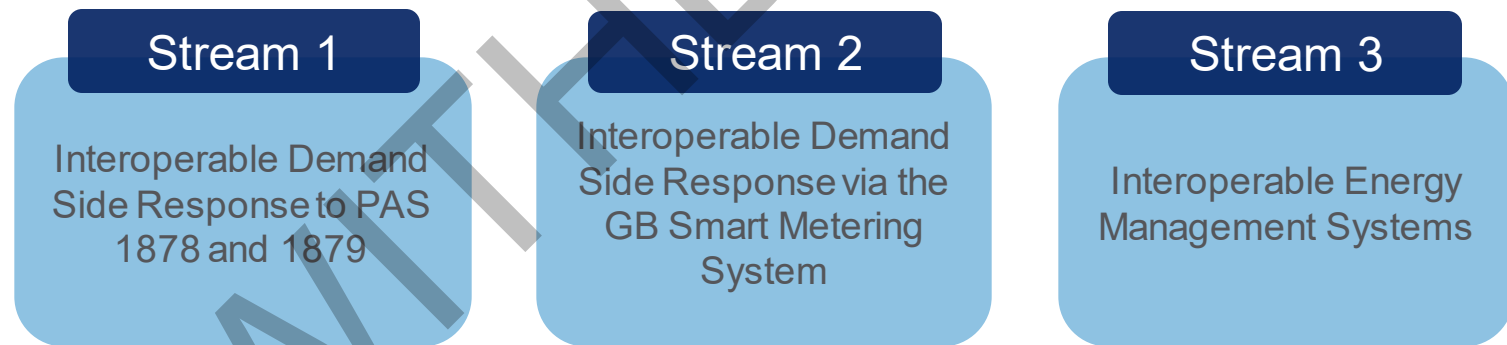- PAS 1878 Annex D sets out one interaction of PAS and Smart Metering, but there may be others

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# Interoperable Demand Side Response Programme

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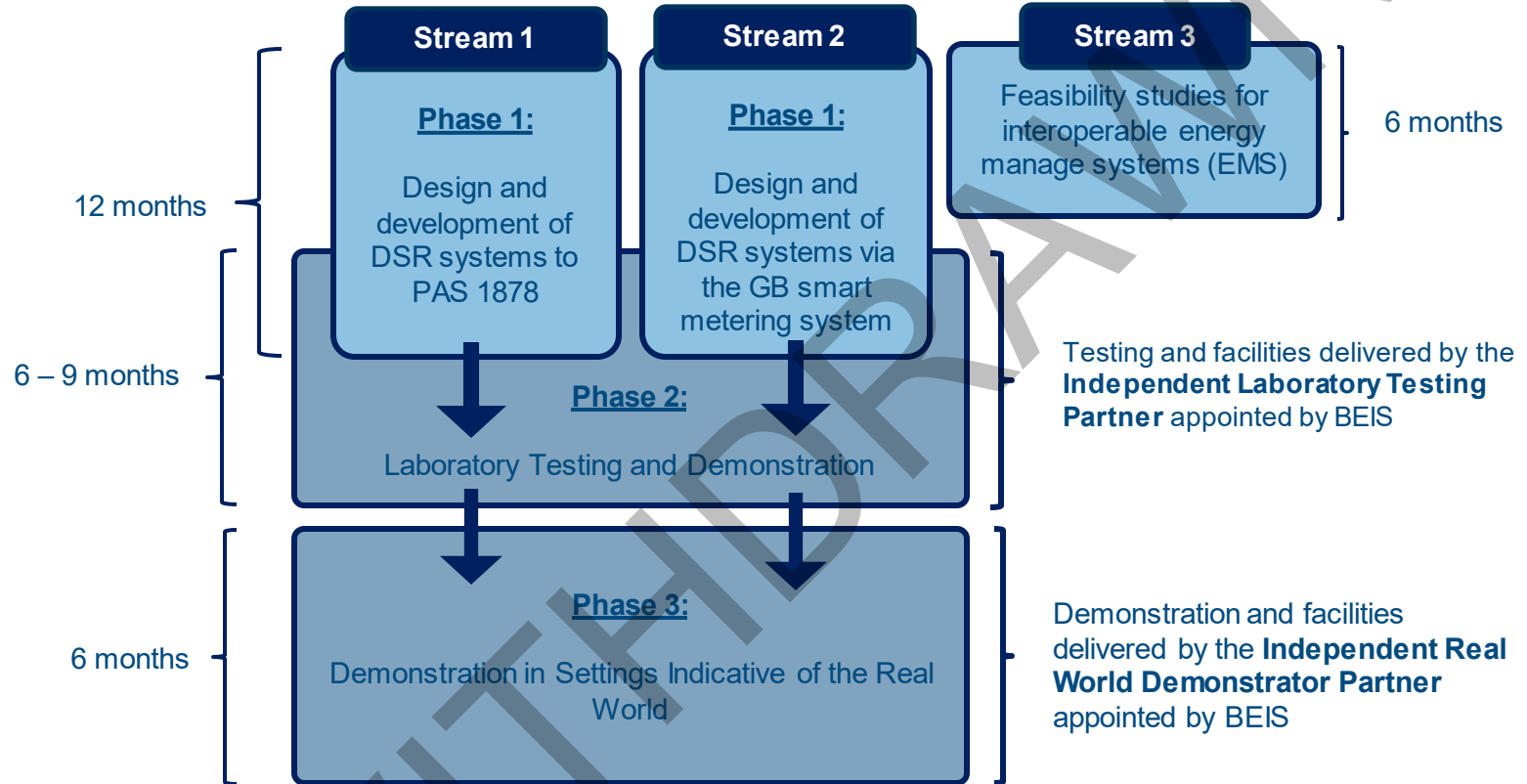Business, Energy
& Industrial Strategy

# Interoperable Demand Side Response Programme Overview

- The **up to £9.15m** Interoperable Demand Side (IDSR) Programme aims to support the development and demonstration of energy smart appliances (ESAs) for the delivery of **interoperable** demand side response.

- The IDSR programme consists of **three streams of activity**, to support the innovation, design, and demonstration of interoperable demand side response (DSR) systems:

| Stream 1 | Stream 2 | Stream 3 |
|---|---|---|
| Interoperable Demand Side Response to PAS 1878 and 1879 | Interoperable Demand Side Response via the GB Smart Metering System | Interoperable Energy Management Systems |

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# Programme Structure

Anticipated timescales

| | | |
|---|---|---|
| **Stream 1** | **Stream 2** | **Stream 3** |

**Stream 1**

**Phase 1:**

Design and development of DSR systems to PAS 1878

**Stream 2**

**Phase 1:**

Design and development of DSR systems via the GB smart metering system

**Stream 3**

Feasibility studies for interoperable energy manage systems (EMS)

6 months

12 months

**Phase 2:**

Laboratory Testing and Demonstration

6 – 9 months

Testing and facilities delivered by the **Independent Laboratory Testing Partner** appointed by BEIS

**Phase 3:**

Demonstration in Settings Indicative of the Real World

6 months

Demonstration and facilities delivered by the **Independent Real World Demonstrator Partner** appointed by BEIS

Please note that the procurement for the independent laboratory testing partner and independent real world demonstration partner has now closed.

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# Programme Scope

- The programme will focus on **low voltage (LV) connected loads**, used in domestic and small non-domestic settings.

## Streams 1 and 2

The four categories of energy smart appliance (ESA) are:

1. Electric vehicle charge points (including vehicle-to-X devices)

2. Battery storage

3. Electric heating, ventilation, and air conditioning (HVAC), including heat pumps, storage heaters and heat batteries

4. White goods*

The ESAs must be based on **existing hardware** whose software is adapted to make the appliance smart and capable of DSR.

ESAs must be:

- minimum **TRL 7** for hardware at the time of application

- minimum **TRL 4** for software at the time of application

*White goods in this Programme refers to cold and wet appliances such as refrigerators, freezers, washing machines, tumble dryers, and dish washers.

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# Stream 1 – Interoperable DSR to PAS 1878

The Interoperable Demand Side Response Programme Stream 1 supports the development and demonstration of energy smart appliances to deliver interoperable demand side response according to **PAS 1878 and 1879.**

**Objectives:**

- Design and develop energy smart appliances (ESAs) including Customer Energy Managers (CEMs) and DSR service provider (DSRSP) platforms to provide DSR in accordance with PAS 1878 and PAS 1879 specification

- Provide PAS 1878 compliant ESAs (including CEMs) and DSRSP platforms for testing and demonstration in Phases 2 and 3 of the Competition

- Provide technical support for laboratory testing (Phase 2) and demonstration in settings indicative of the real world (Phase 3), to be delivered by the independent delivery partner(s) appointed by BEIS for the IDSR programme

- Provide recommendations on how PAS 1878 and 1879 could be updated in future iterations

> **Funding:**
> - up to **£4.5M** (up to **£1.5M** per project)
> - Grant funding – funding intensities will depend on organisation type and size.

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# Stream 2 – Interoperable DSR via the GB smart metering system

The Interoperable Demand Side Response Programme Stream 2 supports the development and demonstration of energy smart appliances to deliver interoperable demand side response via the GB smart metering system.

**Objectives:**

- Design and develop energy smart appliances (ESAs) and DSRSP platforms to provide DSR using a Standalone Auxiliary Proportional Controller (SAPC) and OpenADR functionality via the GB smart metering system (building on Annex D and Annex F in PAS 1878).

- Provide GB Smart Metering and SAPC enabled ESAs and DSRSP platforms for testing and demonstration in Phases 2 and 3 of the Competition.

- Provide technical support for laboratory testing (Phase 2) and demonstration in settings indicative of the real world (Phase 3), to be delivered by independent delivery partner(s) appointed by BEIS for the IDSR programme.

- Provide recommendations on how existing smart metering specifications could be updated in future iterations.

**Funding:**
- up to **£4.5M** (up to **£1.5M** per project)
- Grant funding – funding intensities will depend on organisation type and size.

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# Stream 3 – Interoperable Energy Management Systems

The Interoperable Demand Side Response Programme Stream 3 looks to support feasibility studies to improve and develop understanding of how energy management systems (EMS) can act together with energy smart appliances to deliver interoperable demand side response.

**Objectives:**

- Explore the feasibility of developing an EMS with an interface to:
    - PAS 1878 compliant Customer Energy Managers (CEM), and
    - GB smart metering system and standalone auxiliary proportional controller (SAPC) (building on Annex D and Annex F in PAS 1878)

- Provide key information to aid the standardisation of Interface C for interoperability, ensuring that the proposed interface is compliant with the requirements set out in PAS 1878.

> **Funding:**
>
> - up to **£150,000** (maximum **£30,000** per project)
> - Small Business Research Initiative (SBRI)

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# Multiple Applications (Streams 1 and 2)

- Please note, Projects consortium member(s) can apply into multiple Competition Streams if their applications demonstrate clearly how they intend to meet the relevant specifications.

- Lead applicants and DSRSP's may only enter as part of one application each into each competition Stream.

- ESA manufacturers can enter as part of multiple applications into one Competition stream as long the category of ESA entered is different per application.

- Applicants will need to clarify areas of duplication for work and associated cost should their application of funding be successful under multiple Streams. If Project consortium members or subcontractors are part of multiple successful applications, they must be able to deliver on them and they must not have applied for funding for the same piece of work more than once.

For further guidance on multiple applications, please refer to **Section 3** of the Competition Guidance for each Stream

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# Application Process

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# Application Timeline

| Stage | Activity | Date/Deadline |
|---|---|---|
| **Launch** | IDSR competitions launch | 23 May 2022 |
| | Information event for potential applicants | **14 June 2022 13:00-14:00** |
| | Deadline for applicant questions via e-mail | **by 2pm 21 June 2022** |
| | Publication of applicant questions and answers | 28 June 2022 |
| **Apply** | Encourage to submit registration online | **by 2pm 11 July 2022** |
| | Submit application online | **by 2pm 29 July 2022** |
| **Assess** | Eligibility check, assessment and moderation | August/September |
| **Award** | Notification of award | September/October |

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# Clarification Questions

- Clarification questions related to the IDSR Stream 1-3 Competition Guidance Notes must be submitted to flexibilityinnovation-dsr@beis.gov.uk by **2pm 21 June 2022**. Questions after this deadline will **not** receive a response

- Applicants should state in the email header which Competition stream the questions relate to.

- BEIS will publish replies to any questions which, in our judgement, are of material significance through an online anonymised FAQ sheet on or before **28 June 2022**

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# Where to apply – Smart Survey

- Applicable to all three competition streams of the IDSR programme

- In order to access the application form and submit an application, applicants should complete **a registration form**.

- For further information please join the '**How to Apply**' session today at 3-4pm

# Application Deadline

- **The deadline for submitting applications is 2pm 29 July 2022**

- No submissions, additional material or amendments to applications will be accepted after this deadline.

- Applicants are advised to familiarise themselves with the Smart Survey before this deadline.

- Applicants should not rely on receiving Smart Survey support from BEIS close to the deadline.

- **Reminder – all applications must be submitted via Smart Survey**

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# Finding collaboration partners

https://flexibility-innovation-programme-collaboration.b2match.io/

# Questions?

flexibilityinnovation-dsr@beis.gov.uk

https://www.gov.uk/government/collections/interoperable-demand-side-response-programme

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